CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, January 31
2:00 – 3:00 PM
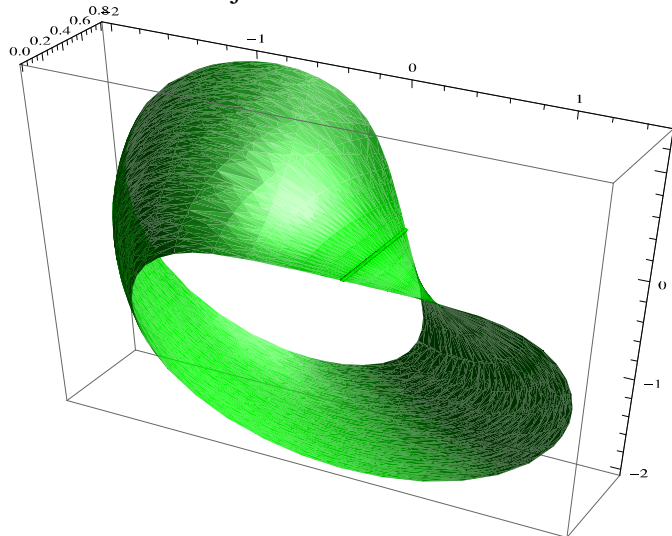Maria Sanford, Room 101

ROTATING DROPS
WITH HELICOIDAL SYMMETRY

OSCAR PERDOMO

CENTRAL CONNECTICUT STATE UNIVERSITY

Abstract: In this talk we will discuss the equilibrium shape of a rotating liquid film, which is invariant under a helicoidal motion of the three dimensional space. Assuming that this helicoidal motion is symmetric with respect to the z-axis, the problem of finding these shapes reduces to the problem of finding surfaces that satisfy the equation $2H = b - \frac{aR^2}{2}$ where H is the mean curvature of the surface, R is the distance from the point of the surface to the z-axis and a and b are constant that depend on the physical initial conditions. We will classify all helicoidal rotating drops and we will explain a dynamical way to describe them. Students taking courses as calculus and differential equations are encouraged to come. This is joint work with Bennett Palmer.